WU TSAI NEUROSCIENCES INSTITUTE
TEN YEAR REPORT

Wu Tsai Neurosciences Institute
Stanford University

WELCOME

The Stanford Neurosciences Institute was founded in 2013 with a mandate to unite the Stanford campus behind our mission to understand the mind and brain in health and disease.

Achieving such a bold mission required putting our neurobiologists together with experts from many fields: with engineers, chemists and materials scientists to design the neuroscience tools of the future; with computer scientists to extract meaningful patterns from complex brain data; with clinicians to link basic findings to patient impact; with ethicists to guide us through uncharted seas.

To build such a community, the Institute committed to three pillars of excellence: (1) **engaging extraordinary people**; (2) **seeding interdisciplinary research**; and (3) **creating vital infrastructure**.

This report demonstrates what we have achieved thanks to the vision of founding director Bill Newsome, the hard work and dedication of our remarkable scientific community and outstanding staff, as well as the unwavering support of University leadership and benefactors including Clara Wu Tsai and Joe Tsai.

Through faculty hires, research grants, training fellowships and community events, we have cultivated a diverse community of more than a thousand scientists, spanning all of Stanford's seven schools and nearly 60% of University departments. Our landmark Stanford Neurosciences Building and Neurosciences Community Laboratories now comprise a campus hub for cutting-edge interdisciplinary brain science. Our cross-disciplinary research has led to hundreds of impactful discoveries and inventions, and nearly $200 million in follow-on funding from outside sources. Technologies and approaches developed here are advancing neuroscience worldwide.

In addition, we have recognized the need for our mission to evolve: Understanding intrinsic barriers to moving scientific insights from a lab out into the world, we have invested in translational research through our Neuroscience:Translate awards, and have pursued research at the intersection of neuroscience and burgeoning fields such as artificial intelligence through targeted grant programs.

With the launch of the Phil and Penny Knight Initiative for Brain Resilience in 2022, we are dedicating ourselves to applying interdisciplinary neuroscience to one of the thorniest—and potentially most transformative—questions in healthcare: How can we keep our minds fit and healthy as we age?

Inspired by our community-led DIBEJ committee, we are weaving the principles of diversity, inclusion, belonging, equity and justice into the fabric of all we do—cultivating a community where faculty, trainees, and staff from historically marginalized backgrounds in science feel a sense of belonging and can contribute their skills and passion to advancing our scientific mission.

Please join me in reflecting on what we can achieve together in our second decade. Our aim is to cultivate an inclusive, collaborative community in the neurosciences; to catalyze foundational discoveries and transformative technologies that advance our understanding of brain function, development and aging; and to accelerate the application of neuroscientific knowledge and technologies to promote human health and well-being locally and globally.

Wu Tsai Neuro has always believed that together, we can tackle challenges that no individual scientist, laboratory, or discipline could approach alone. I welcome you to join us in this mission.

Kang Shen, PhD
Vincent V.C. Woo Director, Wu Tsai Neurosciences Institute
Frank Lee and Carol Hall Professor of Biology and of Pathology

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INSTITUTE MILESTONES

2013/14

Seeding Interdisciplinary Research
- First round of Big Ideas in Neuroscience grants awarded

Engaging Extraordinary People
- Bill Newsome named Institute director; Tanya Raschke named director for planning and operations
- First annual cohort of Interdisciplinary Postdoctoral Scholars
- Inaugural Neurosciences Annual Symposium

Creating Vital Infrastructure
- Shared facilities incorporated as "Neurosciences Community Laboratories"

2014/15

Engaging Extraordinary People
- Paul Nuyujukian and Dan Yamins recruited as Faculty Scholars
- First annual cohort of Stanford Interdisciplinary Graduate Fellows in Neuroscience

Creating Vital Infrastructure
- Planning begins for Neurosciences Building

2015/16

Seeding Interdisciplinary Research
- First bi-annual Wu Tsai Neuro Seed Grants awarded

Engaging Extraordinary People
- Julia Kaltschmidt recruited as Faculty Scholar
- Tom Clandinin named Shooter Family Professor
- Art of Neuroscience contest

Creating Vital Infrastructure
- Neurosciences Building design finalized

2016/17

Seeding Interdisciplinary Research
- Brain Rejuvenation Project, NeuroChoice Initiative, Stanford NeuroTechnology Initiative receive phase 2 Big Ideas in Neuroscience funding.

Engaging Extraordinary People
- Guosong Hong recruited as Faculty Scholar

Creating Vital Infrastructure
- Construction begins on Stanford Neurosciences Building

2017/18

Seeding Interdisciplinary Research
- Second round of Big Ideas in Neuroscience grants awarded
- Second round of Seed Grants awarded

Engaging Extraordinary People
- Scott Linderman recruited as Faculty Scholar
- Stanford Undergraduate Neuroscience Society launched
- Five-year anniversary symposium
- Inaugural Institute retreat

2018/19

Seeding Interdisciplinary Research
- First round of annual Neuroscience:Translate grants announced

Engaging Extraordinary People
- Center for Mind, Brain, Computation and Technology (MBCT) incorporated into Wu Tsai Neuro
- MBCT's NeuroTech Training Program launched
- Inaugural Data Best Practices workshop

2019/20

Seeding Interdisciplinary Research
- Second round of Neuroscience:Translate grants awarded
- Third round of Seed Grants awarded

Engaging Extraordinary People
- Todd Coleman recruited as Faculty Scholar
- First annual summer Neuroscience Undergraduate Research Opportunity (NeURO)
- Committee for Diversity, Inclusion, Belonging, Equity and Justice (DIBEJ) founded

Creating Vital Infrastructure
- Neurosciences Building opens
- Four new Neurosciences Community Labs

2020/21

Seeding Interdisciplinary Research
- Neuro-Omics Initiative and Stanford Brain Organogenesis Program receive phase 2 Big Ideas in Neuroscience funding
- Third round of Neuroscience:Translate grants awarded

Engaging Extraordinary People
- NeURO summer program adds local community college students
- Institute community adapts to impacts of COVID-19

2021/22

Seeding Interdisciplinary Research
- Launch of Phil and Penny Knight Initiative for Brain Resilience
- Fourth round of Neuroscience:Translate grants awarded
- Fourth round of Seed Grants awarded

Engaging Extraordinary People
- Institute reinvigorates focus on community building to counter pandemic impacts
- Second Institute retreat

2022/23

Seeding Interdisciplinary Research
- Fifth round of Neuroscience:Translate grants awarded
- Neuroscience/AI Partnership grants awarded with Stanford HAI
- Knight Initiative for Brain Resilience awards Innovation and Catalyst grants

Engaging Extraordinary People
- Kang Shen named Institute director; Jill Wentzell named executive director
- Laura Gwilliams recruited as Faculty Scholar
- Postdoctoral program expands to include Brain Resilience Scholars supported by Knight Initiative for Brain Resilience

Seeding Interdisciplinary Research

The human brain is one of the great mysteries of science. From this three-pound mass of nerve and glial cells emerge our actions and perceptions, our memories and our imagination. Yet we are only now beginning to unravel its deepest secrets.

Understanding how billions of cells self-assemble into functional circuits that give rise to our mental lives and behavior has enormous potential. It can allow us to promote mental health and well being throughout life. It can help us understand our thoughts, emotions and decisions. It may even shape who we will become in the future.

The Institute has invested more than $52 million in funding for innovative research in neuroscience discovery, engineering and translational health. These projects range across scales, from our blue-sky Big Ideas in Neuroscience projects to more focused efforts to test out novel ideas that could open up new areas of research or to translate promising technologies from the lab to the clinic.

Altogether, the 79 projects we have funded have led to nearly 400 research publications, dozens of patents filed or disclosed and nearly $200 million in follow-on funding.

The discoveries and innovations flowing from our interdisciplinary community place us at the threshold of exciting new revelations about the organ that makes us who we are — and how to leverage this growing understanding to benefit human health and wellbeing worldwide.

Zhenan Bao research group

BY THE NUMBERS: INSTITUTE RETURN ON INVESTMENT

79
Scientific projects funded

5
Neuroscience:Translate projects leading to clinical trial

$52M
Grant funding distributed

42
Patents filed or disclosed

392
Papers published

$185M
Follow-on funding

Return on investments metrics (follow-on funding, papers published, patents and clinical trials) were compiled from progress reports submitted by each project team. These numbers do not include funding for training grants and fellowships, which are covered later in this report.

WU TSAI NEURO GRANT PROGRAMS

The Institute offers a slate of vital funding opportunities for research teams, including the following grants:

Big Ideas in Neuroscience provides funding for teams of scientists pursuing extremely ambitious interdisciplinary projects tackling questions that fundamentally advance our understanding of the brain.

Seed Grants drive discovery by providing funding for interdisciplinary partnerships that pilot novel, high-risk-high-reward ideas.

Neuroscience:Translate grants accelerate the timeframe for translation so that the most promising treatments, tools and programs reach beyond academia sooner.

Focused funding programs kickstart research in areas of collaborative promise and excitement, such as partnerships on neuroscience and AI with Stanford's Institute for Human-Centered Artificial Intelligence (HAI).

TEN YEARS OF BIG IDEAS

In 2013, soon after the Wu Tsai Neurosciences Institute was founded, we launched a bold new program: Big Ideas in Neuroscience. The program's mission was to bring together faculty from diverse backgrounds and disciplines to catalyze transformational advances in neuroscience.

The program was created to support projects whose cutting-edge goals, concepts and techniques had the potential to transform the field, but at the same time made them too new and risky for typical sources of federal funding or outside research grants. This is the stage at which many interdisciplinary research projects falter—and why the Big Ideas program has been so vital in supporting groundbreaking neuroscience research at Stanford.

In response to an initial call for proposals, faculty from across the university formed interdisciplinary teams of 20 or more researchers across many departments, generating novel, sometimes radical, new ideas for investigating long-standing problems in the science of the brain. These projects were so successful in seeding transformative new collaborations and discoveries that the Institute launched a second round of Big Ideas in Neuroscience projects in 2018.

In addition to directly leading to many foundational discoveries, Big Ideas projects have built a network of relationships that have now matured into launchpads for even more ambitious moon-shot science. For example, the Stanford Neurotechnology Initiative supported the development of the Stanford Artificial Retina project, which aims to restore vision to the blind through the world's first true retinal prosthesis. The Stanford Brain Rejuvenation Project laid the groundwork for the new Knight Initiative for Brain Resilience—a visionary research program based at Wu Tsai Neuro that aims to illuminate how human brains change with age and to develop solutions that can restore and maintain brain health.

ROUND 1 BIG IDEAS (2014)

The NeuroChoice Initiative was launched to leverage the science of decision making to better understand the drivers of substance abuse and the policies created to control it. It has led to a thriving interdisciplinary community studying addiction at Stanford.

The NeuroCircuit Consortium aimed to provide a detailed understanding of brain circuits with technology that modulates neural activity to develop improved ways of treating mental health conditions.

The NeuroVision Initiative forged an inter-disciplinary collaboration among physicists, biologists, chemists and translational medical scientists by inventing new ways of visualizing the brain, from individual molecules to neuronal circuits to entire brain regions.

The Stanford Brain Rejuvenation Project set out to understand whether the effects of aging could be slowed or even reversed. The faculty network it built was instrumental in the formation of the Phil and Penny Knight Initiative for Brain Resilience based at Wu Tsai Neuro.

The Stanford Neurotechnology Initiative brought together a team of neuroscientists, electrical engineers and materials scientists to develop neural interfaces that partner seamlessly with our biology. It supported the development of the groundbreaking Stanford Artificial Retina project.

The Stroke Collaborative Action Network convened experts from a wide array of clinical and scientific fields to breach barriers in our understanding of stroke, develop new therapies and improve stroke recovery. It helped form the Stanford Stroke Recovery Program and has led to major additional funding and discoveries.

ROUND 2 BIG IDEAS (2018)

The NeuroDevelopment Initiative set out to develop new tools and techniques for newborn and infant magnetic resonance imaging (MRI) with the goal of better understanding early human brain development and improving screening for neurodevelopmental abnormalities in the first months of life.

The Neuro-Omics Initiative has brought to bear new molecular technologies to illuminate the brain's organization and evolution, bridging long-standing gaps in understanding between molecular and systems-level descriptions of the brain.

The NeuroPlant Initiative was launched to leverage a botanical armamentarium to manipulate the brain — by building a pipeline to explore chemicals synthesized in plants as potential new treatments for neurological disease and as a window into the chemistry of the brain.

The Stanford Brain Organogenesis Program has developed groundbreaking cellular models to reveal how the developing human nervous system builds itself – and how its complex circuits go awry in neurological and psychiatric disease. It has made Stanford an epicenter of this growing field.

"[Being part of this project] has meant a lot to me because it has allowed me to collaborate with stellar scientists with whom I wouldn't otherwise interact. It has also allowed me to take on more challenging questions that would have been impossible with traditional funding mechanisms."

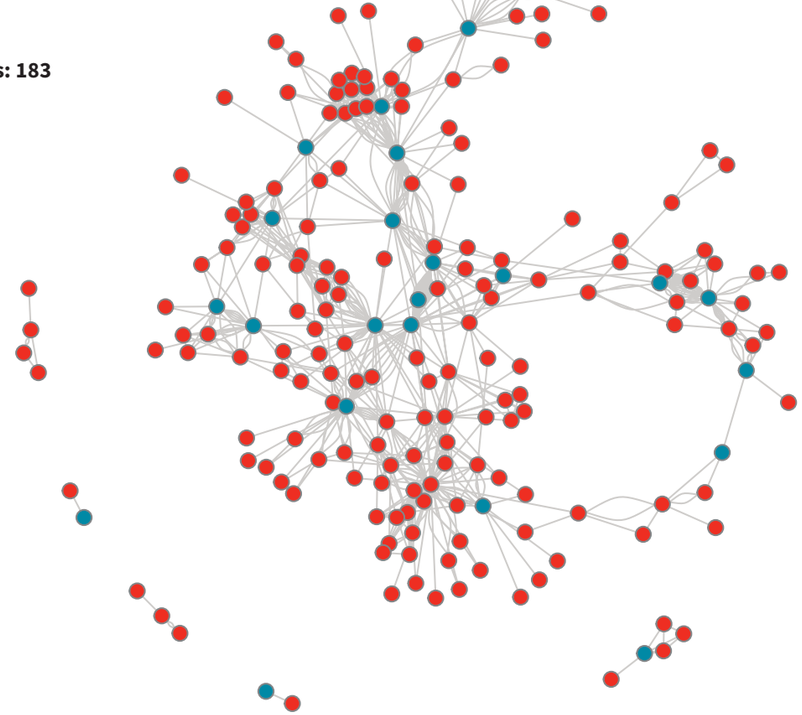
Lauren O'Connell, PhD
Assistant Professor, Biology
Neuro-Omics Initiative faculty participant

Big Ideas Faculty Collaborations 2015-2023

Total papers: 306
Total Collaborative Papers: 183
Total Faculty: 200
Total Departments: 42

Big Ideas Team Leads
Big Ideas Collaborators

Out of a total of 306 research publications supported by Big Ideas in Neuroscience *grants, 183 were co-authored by at least two Stanford faculty. These co-authorships reveal a collaborative network of 200 faculty from 42 departments across all seven Stanford schools catalyzed by the Big Ideas grant program. Lines represent connections between two Stanford faculty members (colored dots) who co-authored at least one research publication stemming from a* Big Ideas *grant project.*



THE KNIGHT INITIATIVE

Breaking Down Barriers to Brain Resilience

Aging is inevitable. Dementia is preventable. The Phil and Penny Knight Initiative for Brain Resilience at Wu Tsai Neuro is a campus-wide initiative dedicated to building a new science of resilient brain aging and combating age-related neurological diseases such as Alzheimer's, Parkinson's and ALS.

Launched in 2022 by a generous gift from Phil and Penny Knight, and directed by Tony Wyss-Coray, PhD, DH Chen Professor of Neurology, the Knight Initiative aims to answer a core mystery of neuroscience: Why do some people age into their 90s and beyond with their cognitive function intact, while others succumb to cognitive decline and dementia?

The groundwork for the Initiative was laid in part by the Brain Rejuvenation Initiative, a Big Ideas in Neuroscience project led by Wyss-Coray and Aaron Gitler, the Stanford Medicine Basic Science Professor in the Department of Genetics, which brought together over a dozen leading researchers from across campus to pursue non-traditional approaches to reversing brain aging.

Now, as part of its mission to stimulate bold new approaches to tackling the drivers of dementia, the Knight Initiative is bringing together experts in aging and dementia as well as new collaborators and ideas from outside the traditional neurodegeneration field through grant calls, seminars and symposia. The Initiative is also building a first-of-its kind atlas of the aging human brain in its in-house Brain Resilience Lab. This resource will enable researchers at Stanford and around the world to track human brain aging at an unprecedented level of detail and identify specific genetic, cellular and circuit-level factors that predict resilient aging or cognitive decline.

KNIGHT INITIATIVE RESEARCH GRANTS

Innovation Awards

From gut to brain: reprogramming peripheral macrophages at the intestinal barrier to prevent age-associated inflammation and cognitive decline
Katrin Andreasson (Neurology), **Ivan Soltesz** (Neurosurgery)

Manipulating inflammation in the aging brain to promote brain resilience
Chris Garcia (Molecular & Cellular Physiology), **Anne Brunet** (Genetics), **Ami Bhatt** (Medicine)

Mechanistic dissection and therapeutic capture of an exercise-inducible metabolite signaling pathway for brain resilience
Jonathan Z. Long (Pathology), **Thomas Montine** (Pathology), **Steven Banik** (Chemistry)

Mutant microglia and resilience to Alzheimer's disease
Siddhartha Jaiswal (Pathology), **Marius Wernig** (Pathology), **Jody Hooper** (Pathology), **Caleb Lareau** (Pathology)

Role of proteostasis and organelle homeostasis in brain resilience during aging
Judith Frydman (Biology), **Wah Chiu** (Bioengineering), **Serena Yeung** (Data Science)

Unleashing engineered T-cells as disease sensors and therapeutic actuators for neurodegenerative disease
Aaron D. Gitler (Genetics), **Rogelio Hernández-López** (Bioengineering, Genetics), **Alice Ting** (Genetics, Biology)

Catalyst Awards

Endocannabinoid metabolism as a driver of brain aging
Ivan Soltesz (Neurosurgery), **Katrin Andreasson** (Neurology)

Resilience to synaptic impairments in neurodegenerative disorders
Thomas Sudhof (Molecular & Cellular Physiology), **Axel Brunger** (Molecular & Cellular Physiology)

Sleep circuits in neurodegenerative disease and aging
Julie Kauer (Psychiatry), **Luis de Lecea** (Psychiatry), **Maria Inmaculada Cobos** (Pathology), **Brice Gaudilliere** (Anesthesia)

Unlocking brain resilience with HDAC inhibition
Kang Shen (Biology), **Aaron Gitler** (Genetics)

Characterizing the genetic architecture of neuropathology with machine learning
Maya Kasowski (Medicine, Pathology), **James Zou** (Data Science), **Thomas Montine** (Pathology), **Anshul Kundaje** (Genetics, Computer Science)

Investigating severe traumatic brain injury using a novel human CSF cell-free mRNA gene panel
Melanie Hayden Gephart (Neurosurgery), **Karen Hirsch** (Neurology)

Mitochondrial DNA and brain resilience
Michelle Odden (Epidemiology), **Marion Buckwalter** (Neurology), **James Zou** (Data Science)

Predicting and promoting resilient brain aging trajectories
Anne Brunet (Genetics), **Karl Deisseroth** (Bioengineering), **Scott Linderman** (Statistics), **Daniel Jarosz** (Chemical & Systems Biology)

Preserving motor engrams in Parkinson's disease: Neural circuit and transcriptomic studies and strategies for resilient motor control
Jun Ding (Neurosurgery), **Mark Schnitzer** (Biology, Physics), **William Greenleaf** (Genetics)

Defining the subcellular biology of brain aging and neurodegeneration
Monther Abu-Remaileh (Chemical Engineering), **Scott Dixon** (Biology)

"About one in ten thousand individuals reaches age 100 cognitively unscathed—seemingly resilient to the effects of time. The Phil and Penny Knight Initiative for Brain Resilience seeks to emulate this sidestepping of the aging process and raise the hope of reversing brain aging altogether to rejuvenate the mind."

Tony Wyss-Coray, PhD
Director, Knight Initiative for Brain Resilience
DH Chen Professor, Neurology

ACCELERATING IMPACT WITH FOCUSED RESEARCH FUNDING

SEED GRANTS / NEUROSCIENCE:TRANSLATE

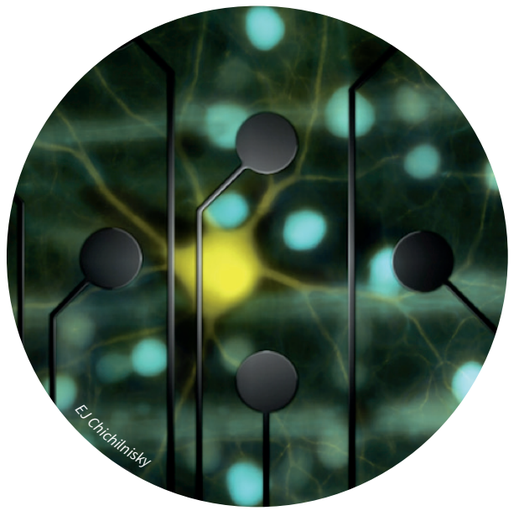
Wu Tsai Neuro has distributed dozens of grants supporting small teams with bold ideas to advance the field — often stimulating new collaboration and bringing non-traditional perspectives into our community.

Read on for just a few examples of the impact of our wide-ranging grant programs:

Getting a Read on Literacy
Literacy is crucial for outcomes throughout life, yet it is costly and time-consuming for educators to conduct the one-on-one assessments used to identify struggling young readers.

Jason Yeatman, PhD, an associate professor in the School of Education and Department of Psychology and an expert on the neurobiology of literacy, created the Rapid Online Assessment of Reading (ROAR) tool to identify children who would benefit from more support as they learn to read. Developed with funding from one of our Neuroscience:Translate grants, ROAR is a practical tool for educators that requires no specialized equipment and is accessible through any internet browser.

"The hope is that, as we begin to understand the barriers for some kids, we can develop targeted interventions," says Yeatman, who has made the tool open source and open access so that it can achieve the greatest impact. ROAR reached 3,000 children in its first year and it has since been adopted by many more school districts nationwide.



Bright Ideas, Bioluminescent Minds: Shining a light on brain cancer treatments
One of the most daunting challenges in treating brain cancer is that cancer drugs often don't work inside the brain because they fail to make it through the tightly structured blood-brain barrier.

Conventional processes for assessing the efficacy of these drugs are costly and time-consuming, so Michael Lin, MD, PhD, an associate professor of neurobiology and of bioengineering, developed a method for quickly and inexpensively evaluating them. Supported by a Wu Tsai Neuro Seed Grant, Lin engineered a synthetic bioluminescent indicator — inspired by an enzyme found in deep sea shrimp — that makes brain tissue glow to indicate when a certain type of cancer drug has passed the blood-brain barrier.

This bioluminescent indicator opens up a path for more rapid drug development for patients with brain cancers. Lin's inventive method also led his team to identify a promising new kinase inhibitor. This class of drug is a mainstay for blocking the spread of many tumors, but due to the difficulty of passing the blood–brain barrier, none are specifically approved for brain cancer, making this newly identified inhibitor all the more exciting.

The Future Is at Your Fingertips: Reaching patients through e-skin
What if it were possible to create synthetic skin that could talk directly to the brain and nervous system?

Zhenan Bao, PhD, the K. K. Lee Professor of Engineering, has developed the first system that combines the sensory, electrical and mechanical features of human skin in a soft, durable form. Bao's e-skin is made of many layers of skin-like materials, each integrating networks of organic nanostructures that discern pressure, temperature, strain and chemicals—and communicate all of this to the brain via electrical pulses.

Funded by a Wu Tsai Neuro AI / Neuroscience Partnership grant, Bao is also drawing on materials science and machine learning to develop a device worn on the face that decodes the silent speech of adults with communication disorders. In a world where AI is often construed as disembodied, Bao's innovations bring sensory qualities to the human-machine interface.

"As clinicians, we saw the need for a novel diagnostic tool to demystify the challenging symptoms of patients presenting with dizziness. However, translating our idea to a device that can be rigorously tested to prove our theories would have been impossible without this award. [This award] converted a passion project into a potential game changer for patient well-being."

Kristen Steenerson
(Otolaryngology - Head & Neck Surgery)
Neuroscience:Translate grant recipient for
"The wearable ENG: A dizzy attack event monitor"

2023 GRANT AWARDEES

Neuroscience:Translate Awards

New thrombectomy device for endovascular neurosurgery
Renee Zhao (Mechanical Engineering), **Jeremy Heit** (Radiology)

Development of an ultrasound neuromodulation therapy to treat rheumatoid arthritis
Robert Michael Fairchild, (Medicine - Immunology and Rheumatology), **Kim Butts Pauly** (Radiology), **Nishant Doctor** (Medicine), **Alexander Sackeim**, (Emergency Medicine)

High-fidelity artificial retina for vision restoration
E.J. Chichilnisky (Neurosurgery, Ophthalmology), **Ruwan Silva** (Ophthalmology), **Martin Breidenbach** (Particle Physics, Astrophysics)

Programmable RNA editing in Parkinson's disease therapy
Jin Billy Li (Genetics), **Birgitt Schuele** (Pathology), **Rohini Datta** (Genetics), **Faria Zafar** (Pathology)

Neurosciences Seed Grants

Use of gut-brain electrophysiology to study interoception in eating disorders
Todd Coleman (Bioengineering), **James Lock** (Psychiatry)

Novel ketone-derived anticonvulsant agents for the treatment of childhood refractory epilepsy
Juliet Knowles (Neurology, Pediatrics), **Jonathan Long** (Pathology)

Life-long, minimally invasive, and multiplex transcriptional profiling of the cerebellum
Xiaojing Gao (Chemical Engineering), **Longzhi Tan** (Neurobiology)

Structural and mechanistic analysis of the protein-protein interface between ABCA1 and ApoE as a potential therapeutic target for Alzheimer's disease
Chaitan Khosla (Chemical Engineering, Chemistry), **Michael Greicius** (Neurology)

Dissecting mechanisms of gut-brain communication in Parkinson's disease
Ami Bhatt (Medicine- Hematology, Genetics), **Kathleen Poston** (Neurology)

Neurosciences / AI Partnerships

At-home stroke rehabilitation system based on an augmented reality and brain–computer interface paradigm
Ada Poon (Electrical Engineering), **Monroe Kennedy III** (Mechanical Engineering), **Maarten Lansberg** (Neurology)

Silent speech decoding using flexible electronics and artificial intelligence
Zhenan Bao (Chemical Engineering), **Shaul Druckmann** (Neurobiology), **Krishna Shenoy** (Electrical Engineering), **Jaimie Henderson** (Neurosurgery)

The synaptic organization of dendrites
Kwabena Boahen (Bioengineering), **Andreas Tolias** (Ophthalmology)

Tracking Parkinson's disease with transformer models of everyday looking behaviors
Justin Gardner (Psychology), **Leila Montaser Kouhsari** (Neurology)

Engaging Extraordinary People

The Wu Tsai Neurosciences Institute is dedicated to convening extraordinary people from across disciplines and personal backgrounds, focusing Stanford's wide-ranging spirit of innovation on advancing our understanding of the mind and brain in health and disease.

"Our mandate was to create a campus-wide neuroscience community—to be inclusive rather than exclusive. We also wanted the community to feel a level of ownership of the Institute's direction. So we gathered faculty from across the University and asked—what could we accomplish together that we couldn't do alone?"

William T Newsome, PhD
Founding Director,
Wu Tsai Neurosciences Institute
Harman Family Provostial
Professor, Neurobiology

This philosophy of inclusion and collaboration has been at the heart of the institute's mission since its inception in 2013, when founding director Bill Newsome invited investigators from across Stanford's seven schools to sit down with colleagues they might never otherwise meet—blending diverse ideas and perspectives, sharing the latest technologies and approaches, and seeding new relationships.

Since then, we have cultivated a diverse community of nearly 1000 faculty and trainees hailing from all seven Stanford schools and more than half of Stanford departments. We have convened wide-ranging experts through collaborative grant calls, interdisciplinary training fellowships and community gatherings such as our weekly seminar series, annual symposia and biennial Institute retreats. The Stanford Neurosciences Building—situated between the schools of Medicine, Engineering, and Humanities and Sciences—serves as a hub for the spontaneous engagement and structured collaborations that are crucial for scientific breakthroughs.

BY THE NUMBERS:
INSTITUTE AFFILIATES

7 faculty scholars, hired by the Institute in partnership with other departments, are at the forefront of our interdisciplinary research and training mission.

All* have published collaborative papers with faculty from other departments.

All* mentor PhD students outside their home departments and from two or more Stanford schools. Most co-advise trainees with faculty from other departments.

600+

faculty affiliates hail from **58** departments across all **7** Stanford Schools.

330

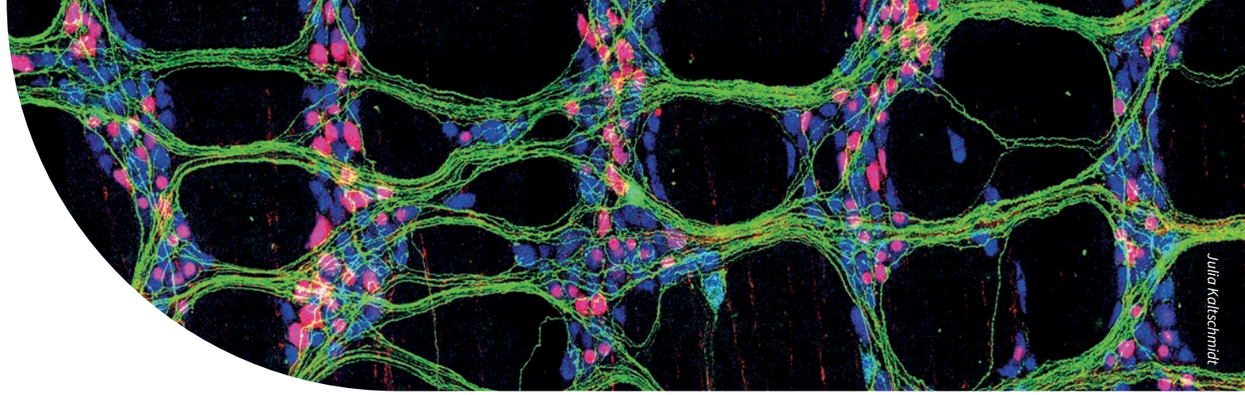
trainees from a wide range of disciplines have been supported by our fellowships and training programs. This includes **51** postdoctoral scholars, **194** graduate students and **85** undergraduates.

*These statements do not include our seventh scholar, who started in Sept 2023.

FACULTY SCHOLARS: SEED CRYSTALS FOR COLLABORATION

The Wu Tsai Neurosciences Institute has recruited seven remarkable faculty scholars to Stanford, hired in conjunction with departments in Stanford's schools of Medicine, Engineering, and Humanities and Sciences. These scholars were selected for their cross-disciplinary mindsets, their track record of collaboration and their potential to contribute new ideas, technologies and expertise to the Stanford neuroscience community.

We envision our faculty scholars as seed crystals for interdisciplinary collaboration—whether leveraging materials science to build new tools for exploring the brain, applying advanced statistics to distill meaning from complex datasets, or pushing our understanding of the nervous system outside the boundaries of the skull, these scholars are at the forefront of our cross-disciplinary neuroscience community.



Julia Kaltschmidt

Todd Coleman
(Bioengineering)

Associate Professor Todd Coleman, PhD, studies the largely unexplored world of interactions between the nervous system and the gut. His lab has developed the high-resolution electrogastrogram (HR-EGG), a novel non-invasive tool to measure electrical signals and mechanical contractions of the stomach and small intestine, and is working with clinicians to explore ways to better understand and diagnose gastrointestinal malfunction and disease.

Laura Gwilliams
(Psychology, Data Science)

Assistant Professor Laura Gwilliams, PhD, studies how the human brain processes and understands language. Our newest faculty scholar, Gwilliams joined the Institute in 2023. With a background in linguistics and expertise in a wide range of techniques for recording and computationally modeling human brain activity, the Gwilliams lab will explore how the brain's processing of linguistic meaning manages to outpace even the most advanced artificial intelligence algorithms.

Guosong Hong
(Materials Science and Engineering)

Assistant Professor Guosong Hong, PhD, aims to bridge materials science and neuroscience and blur the distinction between the living and non-living worlds by engineering novel tools to interrogate and manipulate the brain. The lab is currently developing ultrasound, infrared and radiofrequency-based neural interfaces to peek into the inner workings of the brain. He has received a Stanford Gores Award for excellence in teaching.

Julia Kaltschmidt
(Neurosurgery)

Associate Professor Julia Kaltschmidt, PhD, and her lab aim to understand the molecular basis of neuronal circuit formation, particularly those underlying locomotion, sexual function and gut motility. They are shedding new light on the fundamental role that local inhibitory microcircuits have in shaping animal behavior, revealing the circuitry of the enteric nervous system in the gut, and are exploring the functional consequences of enteric nervous system abnormalities.

Scott Linderman
(Statistics)

Assistant Professor Scott Linderman, PhD, works at the intersection of machine learning and computational neuroscience, developing models and algorithms to better understand complex biological data generated by modern neuroscience tools. Linderman has received a McKnight Scholar award and Sloan Research Fellowship, two prestigious honors for early career neuroscientists.

Paul Nuyujukian
(Bioengineering, Neurosurgery)

Assistant Professor Paul Nuyujukian, MD, PhD, leads the Brain Interfacing Laboratory, and is working to establish brain-machine interfaces as a platform technology for understanding and treating neurological disorders. The lab seeks to understand the causal relationships between multi-dimensional cortical dynamics and behavior. Collaborating with clinicians, Nuyujukian is improving the diagnosis and treatment of brain-related disorders such as stroke and epilepsy.

Daniel Yamins
(Psychology, Computer Science)

Assistant Professor Dan Yamins, PhD, conducts research at the intersection of neuroscience, artificial intelligence, psychology and large-scale data analysis. His lab's approaches are unique in that they seek to use biology as inspiration to develop better artificial intelligence algorithms and, in turn, to use these improved algorithms to discover better models of how the brain works. Yamins has received a Sloan Research Fellowship, a prestigious honor for early career neuroscientists.

"My fascination with chemistry [led me] into the [Stanford Chemistry] lab of Hongjie Dai, where our findings led to investigating ways to see through skin into the brain. It was awe-inspiring to think that the work of chemists and physical scientists could also contribute to the spectacular goal of neuroscience: to understand the brain and the mind. If I had known about neuroscience when I was younger, I probably would've chosen it as my specialty. But it's never too late to get one step closer to a dream."

Guosong Hong, PhD
Wu Tsai Neurosciences Institute Faculty Scholar Assistant Professor, Materials Science and Engineering

FOSTERING THE NEXT GENERATION

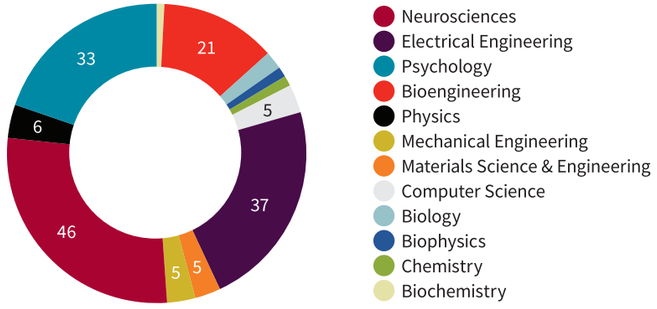
For the past decade, our Interdisciplinary Postdoctoral Scholars program has built a community of young scientists comfortable at the intersectional frontiers of their field. Scholars tour each other's labs, present one another's research and often become linchpins of collaborations between labs in different fields. This successful program has been a model for interdisciplinary training programs across campus. Beginning in 2023, the Institute added a Brain Resilience Scholars track, supported by the Knight Initiative for Brain Resilience, doubling the size of our postdoc program.

The Institute also supports graduate-level research through Stanford Interdisciplinary Graduate Fellowships in neuroscience. In addition, the Center for Mind, Brain, Computation and Technology—part of Wu Tsai Neuro since 2018—has built a network of trainees seeking to leverage sophisticated mathematical models and innovative technologies to more precisely understand brain function. The Center's complementary NeuroTech Training Program invites trainees from quantitative and engineering disciplines to apply their technical skill-sets to problems in neuroscience.

Our Neuroscience Undergraduate Research Opportunity (NeURO), founded in 2019, introduces Stanford undergraduates to neuroscience research. Students learn how to do research in an academic environment, network, and share their findings with the neuroscience community. In 2020, inspired by our DIBEJ committee, the Institute launched a pilot program with local community colleges (NeURO-CC) to extend this opportunity to students from underrepresented backgrounds beyond the Stanford campus, a program the Institute formalized and expanded in 2023.

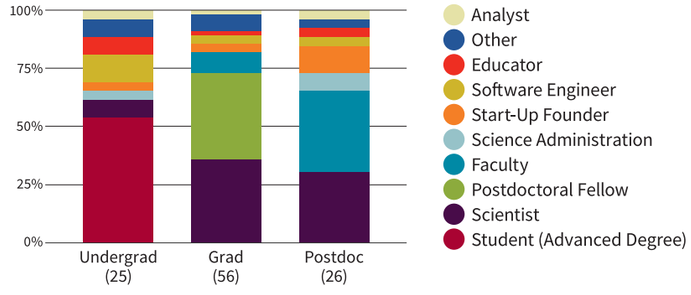
PhD Programs of Wu Tsai Neuro Graduate Trainees (2013-2023)

Our training programs for graduate students draw from PhD programs across a wide range of disciplines to forge an intellectually diverse community of trainees. More than half of these trainees have worked in labs outside their PhD programs' home departments.



Current Career Positions of Wu Tsai Neuro Trainee Alumni

Our alumni now work in a range of industries, leveraging their interdisciplinary training to advance the field and impact society. Data limited to alumni whose career information could be obtained via LinkedIn and web search.



2023 TRAINEES*

Postdoctoral Scholars Program

Interdisciplinary Scholars

Claire Baum *"Restoring vision with epiretinal prostheses"*
Advisor: E.J. Chichilnisky (Neurosurgery)

Amy Nippert *"Microglia-mediated astrocyte activation in chronic pain"*
Advisors: Vivianne Tawfik (Anesthesia) & Nima Aghaeepour (Pediatrics)

Renzhi Yang *"Neuronal and genetic imprints of male mating experience"*
Advisors: Nirao Shah (Psychiatry) & Kang Shen (Biology)

Jiwon Yeon *"Tracking Parkinson's disease with transformer models of everyday looking behaviors"*
Advisors: Justin Gardner (Psychology) & Leila Montaser Kohusari (Neurology)

David Zoltowski *"Improving BCI generalizability with multi-task modeling and autocalibration"*
Advisors: Scott Linderman (Statistics) & Jaimie Henderson (Neurosurgery)

Brain Resilience Scholars (Knight Initiative)

Chiara Anselmi *"The origin of neurodegeneration: insight from a unique colonial chordate"*
Advisor: Irving Weissman (Pathology)

Ravi Nath *"Rejuvenating sleep to enhance brain resilience with age"*
Advisors: Anne Brunet (Genetics) & Karl Deisseroth (Bioengineering)

Daniela Rojo Capitanio *"Determining the role of circadian transcriptional control in myelin-forming precursors in neurodegeneration"*
Advisors: Erin Gibson (Psychiatry & Behavioral Sciences) & Brad Zuchero (Neurosurgery)

Takeshi Uenaka *Neuron-glia interactions in regulating protein aggregation in human cell models.*
Advisors: Marius Wernig (Pathology) & Michael Bassik (Genetics)

Yi Zeng *"Elucidating the role of alternative polyadenylation in amyotrophic lateral sclerosis (ALS) and frontotemporal dementia (FTD)"*
Advisor: Aaron Gitler (Genetics)

NeURO / NeURO-CC fellows

NeURO Fellows

Harmony Alvarez (Biology)

Loran Baxter Mercado (Undeclared)

Brandon Bui (Human Biology)

"My interdisciplinary graduate fellowship has enabled me to work with several different mentors in the community. That's been great because whenever I have a problem, I know who to turn to, whether it's machine learning or neuroanatomy or computational neuroscience or experimental design."

Erin Kunz
Ketterer-Vorwald Neurosciences Interdisciplinary Graduate Fellow and MBCT NeuroTech Trainee developing brain-computer interfaces to restore speech in patients with ALS

Maclaira Camper (Human Biology)
Kelly Harvell (Bioengineering)
Noor Hassan (Symbolic Systems & Human Biology)
Heidy Muñoz (Undeclared)
Kim Ngo (Symbolic Systems)
Pablo Nunez Perez (Bioengineering)
Karla Perez (Psychology & Data Science)
Hannah Pescaru (Biomedical Computation)
Rebecca Pizzitola (Symbolic Systems)
Ariana Rodrigues (Undeclared)
Arshia Sazi (Undeclared)
Zara Thomas (Chemistry)
Micah Williams (Human Biology)
Cydney Wright (Biology)
Asmani Yamin (Undeclared)

NeURO-CC Fellows

Jahnelle Ybarra Sullivan
De Anza College (Biology)

Yessica Acosta
Mission College (Biochemistry and Molecular Biology)

Feven Asmelash
De Anza College (Biology)

Kate Duong
Mission College (Electrical Engineering)

Miguel Fuentes
Foothill College (Biology)

Nazly Gama Lagunas
Foothill College (Biology)

Jailah Mitchell
Foothill College (Environmental Sciences)

Arlyne Torres
De Anza College (Mechanical Engineering)

*2022-2023 Interdisciplinary Graduate Fellows and Mind, Brain, Computation and Technology trainees were included in our previous annual report.

DIVERSITY, INCLUSION, BELONGING, EQUITY AND JUSTICE

With the backdrop of 2020's Black Lives Matter movement, the Executive Committee of the Wu Tsai Neurosciences Institute committed to action by forming the Committee on Diversity, Inclusion, Belonging, Equity and Justice (DIBEJ).

In alignment with Institute goals of community involvement, committee members self-identified in response to a broad invitation. Committee founder and faculty lead Marion Buckwalter, MD, PhD, ensured that committee members had the freedom to invest their time doing work that mattered to them. Together, the committee developed a list of suggested actions that they felt would contribute to lasting improvements in the experience of Stanford neurosciences community members, particularly those from historically excluded backgrounds.

Two of the proposed programs the Institute has since adopted were envisioned entirely by trainees:

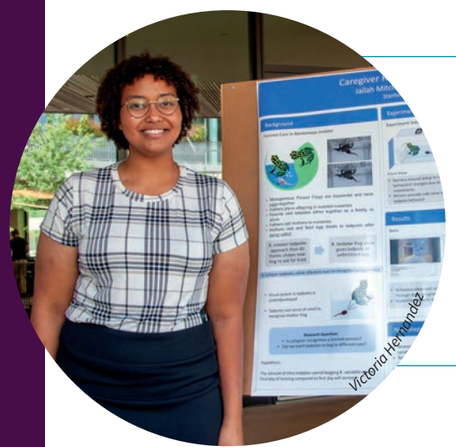
BELONG is a community-driven association of Stanford Neuroscience trainees that strives to create an inclusive and welcoming environment for community members who specifically identify as Black, Indigenous, Latinx and/or People of Color. BELONG organizers develop programming that responds to the needs of active members, such as a series of invited seminars by up-and-coming young scientists of color from across the country.

The **NeURO-Community College program** was the brainchild of undergraduate Hodan Farah, who transferred to Stanford from Foothill College. This program, which hosts local community college students for a summer of intensive research on campus, expanded in 2023 to host a cohort of eight students. NeURO-CC maximizes student success through programming focused on scientific development and professional growth, in addition to community building opportunities for both mentors and students.

Another program, **Pathways to Neuroscience**, was launched by Buckwalter and faculty members Erin Gibson, PhD, and Miriam Goodman, PhD, with funding from the National Institutes of Health to support trainees from underrepresented backgrounds at the critical transition period between graduate school and postdoctoral research.

While centering the voices of community members who identified as being from historically excluded backgrounds, the DIBEJ committee also set a goal of engaging our broader community — including those new to thinking about these issues — in the effort to enhance diversity, inclusion and belonging at Wu Tsai Neuro.

Together with Institute staff, the committee worked to refine processes with a high chance of implicit bias, such as the selection of seminar speakers and grant recipients. With the committee's guidance, Institute leadership implemented a required diversity statement in all grant applications for Institute awards, with the goal of developing the capacity of all community members to foster inclusive research environments. A major focus of these statements is allowing faculty to be authentic about where they are in their knowledge about DIBEJ-related issues, thereby fostering a safe space for everyone in our community to contribute to our DIBEJ goals.



"Working in the lab has given me the chance to meet amazing people who do extraordinary work. I've been exposed to so much technology and so many methods of work. Being a part of the Wu Tsai Neurosciences Institute community has motivated me to work harder towards a future that I didn't think I could have."

Jailah Mitchell
2023 NeURO-CC trainee from Foothill College

Q&A WITH CLARA WU TSAI

FROM DISCOVERY TO IMPACT

In 2018, when the Stanford Neurosciences Institute was renamed for Clara Wu Tsai, '88, MA '88, and Joe Tsai, it reflected a longstanding interest in the life sciences at Stanford and a growing appreciation for the potential impact of neuroscience.

Wu Tsai was a member of the presidential task force that helped shape the Stanford Neurosciences Institute and Stanford ChEM-H (Chemistry, Engineering & Medicine for Human Health). She also served on the advisory council for Stanford Bio-X, an interdisciplinary platform launched in 1998 that has become a model for biosciences programs worldwide.

Wu Tsai serves as co-chair of the advisory cabinet for the Wu Tsai Neurosciences Institute and is an active member of the advisory council for the interdisciplinary life sciences institutes at Stanford. She has been a Stanford University Trustee since 2021.

What motivated you to support this burgeoning neuroscience institute at Stanford?

The Institute's integrative approach to cultivating a research culture in neuroscience appealed to us deeply. Bill Newsome was able to construct a set of educational, basic research and professional training opportunities for Stanford students, staff and faculty that involved everyone with a passion for contributing to understanding the human mind. This sort of integration is critical for linking the multiple scales of inquiry needed to solve some of the most resistant puzzles such as brain development, childhood learning, adult adaptation, mental health issues such as depression and disorders like Parkinson's or Alzheimer's disease.

What do you find the most inspiring or encouraging about the Institute's progress over the past decade?

First, we were delighted to see the new Stanford Neurosciences Building bring many laboratories and core facilities under one roof, enhancing human interactions in creative discovery and innovation. Second, it has been fulfilling to see Big Ideas projects and other grants produce transformational progress—from Tony Wyss-Coray's leadership of the new Knight Initiative for Brain Resilience to Sergiu Pasca's work on brain organoids. Third, we're pleased that hundreds of Stanford scholars have participated in the Institute over the decade and that students educated here have traveled out across the world to share ideas which germinated in their Stanford experiences. Fourth, the co-existence of experimental and theoretical and computational approaches to understanding the brain and mind is uncommon and inspiring. Modern biology needs theory and vice-versa — they influence each other in positive ways. Finally, the cohesive culture of the entire Stanford neuroscience community is a pleasure to see and owes a lot to Bill's careful welcoming and nurturing of diverse perspectives in the formative years.

What do you hope the Institute will accomplish over the decade to come?

We're excited for the future of the Institute under Kang Shen's leadership. At a fundamental level, we hope to learn how the molecules and cells that make up the human brain coordinate their activity to compose the most evolved of human behaviors, including learning, social interactions, creativity, intelligence and altruism, among others. This initial knowledge will hopefully be rapidly followed by solutions for specific diseases, especially Alzheimer's, Parkinson's and mental health issues such as depression and addiction.

We also believe that theoretical principles and computational processes within the mind will be defined, allowing us to use more general principles in attacking future problems in mind and brain health. The mind is the basis for human society as we know it, so understanding the mind is the basis for creating the future society we imagine.

Creating Vital Infrastructure

In 2019, Stanford celebrated the opening of the ChEM-H / Neurosciences Research Complex, which houses the Wu Tsai Neurosciences Institute and our sister institute, Sarafan ChEM-H.

Designed to evoke a crossroads between the schools of Medicine, Engineering, and Humanities and Sciences, the building physically manifests our shared commitment to stimulating dialogue and collaboration across disciplines.

The building is home to 25 highly collaborative faculty and their trainees from 26 departments across three Stanford Schools. Our state-of-the-art research labs and engineering facilities, combined with our unique Neurosciences Theory Center, allow experimental neuroscientists, technologists and theoretical and computational neuroscientists to collaborate closely to advance our understanding of the mind and brain.

The Neurosciences Building also houses six of the Institute's seven community laboratories, whose expert directors provide training and assistance in cutting-edge neuroscience technologies, from non-invasive brain stimulation to advanced microscopy.

The building's shared spaces and frequent community events result in serendipitous connections that can lead to transformative new ideas and collaborations.

THE THEORY CENTER

The Neurosciences Theory Center is a "building within a building" that houses faculty and trainees with a quantitative bent and an interest in modeling neural systems and their complex computations. Theory Center residents work closely with colleagues in experimental labs, using cutting-edge data analysis, modeling and artificial intelligence to reverse engineer the cognitive and behavioral "software" run by the three pounds of neural hardware in our skulls.

BY THE NUMBERS: NEUROSCIENCES BUILDING

26
departments represented from three Stanford schools*

235K
square feet of collaborative research space

7
quantitative faculty in the Neurosciences Theory Center

25
faculty research groups

6
Neurosciences Community Laboratories providing cutting-edge tools and techniques

*Includes faculty and trainee home departments. Trainees were designated as PhD and Master's students with Neurosciences Building faculty as advisors. Trainee departments are the home departments of the PhD and Master's programs.

Bruce Damonte, Ennead Architects

NEUROSCIENCES COMMUNITY LABORATORIES

The Neurosciences Community Laboratories are the Institute's collaborative hubs for neuroscience discovery, engineering and translational health research. Some are University service centers, providing many levels of research support—from access to equipment to conducting complete experiments. Others exist to expose researchers to new tools such as virtual reality technologies or techniques for brain stimulation and recording.

The labs provide our community with in-house access to world-class scientific facilities, technologies and expertise. In the past 10 years, our labs have served thousands of customers — including scientists from hundreds of Stanford laboratories based in more than 50 University departments. Our laboratories' high-end services are sought after by research institutions and companies around the world, but their first mandate is to serve the Stanford neuroscience community.

At the heart of the community labs are the professional scientists who serve as laboratory directors. Their deep experience in their fields and passion for supporting scientific research and technology development allows them to work with research teams of all experience levels to develop and implement new projects.

BY THE NUMBERS: COMMUNITY LABS*

2,174 Customers

317 Institutions

56 Stanford Departments

371 Stanford Labs

*All-time user data 2014 – May 2023

Behavioral and Functional Neuroscience Laboratory (BFNL)

Mehrdad Shamloo, PhD
Director

A one-stop shop for preclinical studies of brain function and behavior, BFNL offers dozens of behavioral paradigms, CNS disease models and experimental protocols in biochemistry, histochemistry and pharmacology.

Gene Vector and Virus Core

Nicholas Wall, PhD
Director

A central facility for producing and distributing the viral vectors and cDNA plasmids that allow modern neuroscience unprecedented experimental control over synapses, cells and circuits in model systems and live mammalian brains.

Koret Human Neuroscience Lab

Milena Kaestner, PhD
Director

The Koret Lab hosts state-of-the-art electroencephalography (EEG) and transcranial magnetic stimulation (TMS) technologies, enabling scientists to study brain activity in human research subjects with unprecedented clarity and control.

Avery Krieger

Vincent V.C. Woo Sandbox Lab

A dedicated space for collaborative pilot projects between engineers and neuroscientists, featuring spaces for electrophysiology, molecular biology and technology prototyping. The lab is also used for training programs and workshops and currently houses the Brain Resilience Laboratory of the Knight Initiative for Brain Resilience.

Neuroscience Microscopy Service

Gordon Wang, PhD
Director

A university service center founded in 2007 to provide microscopy expertise and access to high resolution, imaging and visualization technologies to Stanford University and surrounding academic and biotech researchers.

Neuroscience Preclinical Imaging Lab

Jieun Kim, PhD
Director

Providing preclinical magnetic resonance imaging (MRI) technology and expertise to the Stanford community, the lab houses a uniquely powerful and versatile MRI scanner, the first of its kind in the United States.

Visualization Lab

Christoph Leuze, PhD & **Alfredo Dubra, PhD**
Directors

The Visualization Lab features a community space to explore clinical and research applications of VR and mixed reality technologies as well as a cutting-edge adaptive optics system that leverages optical principles developed by astronomers to enable high-resolution imaging of the human retina.

MESSAGE FROM THE EXECUTIVE DIRECTOR

As executive director I feel privileged to see the quiet moments behind the scenes that underlie the accomplishments described in this report: a faculty member conferring with an undergrad as a respected contributor to the field, trainees speaking out about what could make this place better, thoughtful teams of staff and faculty collaborating to elevate diverse perspectives in cutting-edge science.

These moments— often invisible to the outside world — give Wu Tsai Neuro our heart and soul. They elevate us from individuals with a shared passion to a community moving towards a larger goal.

All we accomplish here depends on the creativity and the dedication of so many people: Founding director Bill Newsome and executive director Tanya Raschke, together the driving force of our first decade; Kang Shen, leading us into our next decade with a focus on the impact of neuroscience on humanity; deputy directors past and present, valuable counselors and steadfast champions of our mission; our faculty, probing the frontiers of knowledge and inventing the future while also mentoring the next generation; our trainees, whose daily determination makes the engine of research run; the dedicated staff who develop, support and promote all of our programs; and all of our supporters at Stanford and beyond from our earliest days to our next horizons.

With sincere thanks,

Jill Wentzell, PhD
Executive Director, Wu Tsai Neurosciences Institute

OUR TEAM

EXECUTIVE COMMITTEE

Kang Shen, PhD
Vincent V.C. Woo Director
Frank Lee and Carol Hall Professor; Professor of Biology and of Pathology

Jill Wentzell, PhD
Executive Director

Marion Buckwalter, MD, PhD
Deputy Director
Professor of Neurology and of Neurosurgery

Lisa Giocomo, PhD
Deputy Director
Professor of Neurobiology

Allison Okamura, PhD
Deputy Director
Richard W. Weiland Professor in the School of Engineering; Professor of Mechanical Engineering

Anthony Wagner, PhD
Deputy Director
Lucie Stern Professor in the Social Sciences; Professor of Psychology

FORMER EXCOMM MEMBERS

Scott Delp, PhD
Director, Wu Tsai Human Performance Alliance at Stanford, James H. Clark Professor in the School of Engineering; Professor of Bioengineering and of Mechanical Engineering

Miriam Goodman, PhD
Mrs. George A. Winzer Professor of Cell Biology

Rob Malenka, MD, PhD
Nancy Friend Pritzker Professor; Professor of Psychiatry and Behavioral Sciences

William Newsome, PhD
Founding Director
Harman Family Provostial Professor; Professor of Neurobiology

Tanya Raschke, PhD
Founding Director for Planning and Operations

Brian Wandell, PhD
Isaac and Madeline Stein Family Professor; Professor of Psychology

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Communications Manager

Julia Diaz
Digital Community and Social Media Strategist

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Emily Shimizu
Associate Director, Development

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IT Manager

Monette Clemons
Facilities Specialist

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Facilities Manager, Chem-H / Neuro Research Complex

Kenneth Moore
Facilities Specialist 2

Nisael Navarro
Desktop Support Analyst

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Associate Director for Finance and Administration

Stacy Hernandez
Administrative Associate II

Cathy Lau, MBA
Financial Analyst

George Mason
HR / Administrative Associate

Maritza Vallejo
Accountant

KNIGHT INITIATIVE FOR BRAIN RESILIENCE

Tony Wyss-Coray, PhD
Director, Knight Initiative for Brain Resilience
D. H. Chen Professor II, Neurology & Neurological Sciences

Natasha K. Hussain, PhD
Associate Director, Knight Initiative for Brain Resilience

Alina Isakova, PhD
Director of the Knight Brain Resilience Laboratory

Shon Alimukhamedov
Research Associate, Brain Resilience Laboratory

Debra Allison
Administrative Associate II

Micaiah Emmy Atkins
Research Associate, Brain Resilience Laboratory

Syed Bukhari, PhD
Primary Neuroanatomist, Brain Resilience Laboratory

James Haberberger
Data Architect, Brain Resilience Laboratory

Jennifer Okamoto, PhD
Genomics Scientist, Brain Resilience Laboratory

Lu Zhou, PhD
Senior Scientist, Brain Resilience Laboratory

NEUROSCIENCES COMMUNITY LABORATORIES

Tim Doyle, DPhil
Associate Director, Neurosciences Community Laboratories

Mehrdad Shamloo, PhD
Professor of Neurosurgery
Director, Behavioral and Functional Neuroscience Laboratory (BFNL)

Nay Lui Saw
Lab Manager, BFNL

Nicholas Wall, PhD
Director, Gene Vector and Virus Core (GVVC)

Subba Dhulipala
Staff Scientist, GVVC

Rebecca Edwards
Staff Scientist, GVVC

Anitha Ponnuswami
Staff Scientist, GVVC

Jihanne Shepherd
Staff Scientist, GVVC

Milena Kaestner, PhD
Director, Koret Human Neurosciences Laboratory

Gordon Wang, PhD
Director, Neuroscience Microscopy Service
Clinical Associate Professor, Psychiatry and Behavioral Sciences

Jieun Kim, PhD
Director, Neuroscience Preclinical Imaging Laboratory

Christoph Leuze, PhD
Co-Director, Visualization Laboratory

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Chiara Bertipaglia, PhD
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Programs Associate

Zulema Garibo Gonzalez
Training and Fellowships Program Coordinator

Victoria Hernandez, PhD
Special Projects Manager

Valerie Vargas-Zapata, PhD
Diversity Initiatives Program Coordinator

Wu Tsai Neurosciences Institute Executive Committee

Wu Tsai Neurosciences Institute central staff

Knight Initiative for Brain Resilience staff and leadership

Top two photos: Ola Hopper; Bottom photo: Vanessa Joy

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